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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,782	01/12/2004	Karl-Erik Olsson	07589.0151.PCUS00	1781
28694	7590	04/03/2006	EXAMINER	
NOVAK DRUCE & QUIGG, LLP			HO, HA DINH	
1300 EYE STREET NW			ART UNIT	
400 EAST TOWER			PAPER NUMBER	
WASHINGTON, DC 20005			3681	

DATE MAILED: 04/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/707,782	<b>Applicant(s)</b> OLSSON, KARL-ERIK	
	<b>Examiner</b> Ha D. Ho	<b>Art Unit</b> 3681	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 3, 6 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 7-13 and 15-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This Office Action is responsive to Applicant's Amendment filed on 12/27/05. Claims 1-18 are currently pending.
2. Claims 3, 6 and 14 were withdrawn from further consideration pursuant to 37 CFR 1.142(b) as not being directed to the elected Species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 03/18/05.
3. The drawings were received on 12/27/05. These drawings are approved.

#### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
  - Claim 18 recites the limitation "said control units" in the last line. There is insufficient antecedent basis for this limitation in the claim. Note that there is only one "control unit" recited previously.

#### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 4, 5, 8-10, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art, Figure 1 (hereafter APA), in view of Schreiner (US 4,393,952).

APA shows a vehicle having at least two pair of driving wheels (16a, 16b, 18a, 18b) of which one pair (18a, 18b) is steerable in relation to the longitudinal axis of the vehicle, the vehicle comprising:

a first transmission branch (the differential of the wheel axle 16) operatively connected to a first pair of driving wheels (16a, 16b); and

a second transmission branch (the wheel axle 18) operatively connected to a second pair of driving wheels (18a, 18b), the first and second transmission branches rotatively connected to one another (connection at 13).

APA does not show at least one of the first and second transmission branches comprising at least two control units.

Schreiner shows a vehicle having a pair of driving wheels (13, 13') (note that the driving sprockets 13 and 13' are equivalent to driving wheels), a transmission branch (7-10, 8'-10', 14-19, 14'-19') including two control units (14-19 and 14'-19'), one for each driving wheel thereof, each control unit comprising control means (19, 19') for varying the transmission ratio of a respective driving wheel.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace one of the transmission branches of APA by the transmission branch (7-10, 8'-10', 14-19, 14'-19') of Schreiner so that the drive motors can be independently operated for

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adding of their rotation to or subtracting it from that of the respective output (wheels) (see abstract), and the possibilities of modern technology are advantageously combined, whereby by branching the drive power, a good total effect and efficiency is obtained (col. 1, lines 37-40).

The modified vehicle would have all the features recited in claims 4, 5, 8-10 and 17 because Schreiner shows each control unit comprising a control motor (19, 19') configured to influence the transmission ratio of a planetary gear (7-10), the planetary gear set comprising a sun gear (10), a planet carrier (11) with planet wheels (9) and internal gear (8), the control motor (19) connected to the sun gear (10), wherein the connection (9, 11) between the internal gear (8) and an axle differential (12) extends coaxially through the sun gear (10) and the control motor (19) is configured to interact with the sun gear by way of a gear (15), wherein the control unit is disposed between a drive shaft (4) and a driving wheel (13) so that the drive shaft (4) interacts with the internal gear (8) and the driving wheel (13) interacts with the planet wheels (9).

Regarding claim 15, APA shows the vehicle being articulated.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Schreiner (US 4,393,952) as applied to claims 1, 4 and 5 above, and further in view of Mukai et al. (US 5,844,387).

The combination of APA and Schreiner shows the planetary gear-set and the control motor being connected by a gear (15) (see Schreiner). Schreiner does not specify that gear 15 is a hypoid gear. Hypoid gear used in the vehicle transmission is old and well known. For example, Mukai et al show a motor (8) including a hypoid gear 4.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of APA and Schreiner such that the control motor includes a hypoid gear in view of Mukai et al since using a hypoid gear in the transmission is old and well known in the art.

9. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Schreiner (US 4,393,952) as applied to claims 1, 8 and 10 above, and further in view of Chamberlain (US 4,186,626).

APA does not show the driving wheels having a hub reduction. A hub reduction arranged in a wheel hub is old and well known in the art. For example, Chamberlain shows a wheel hub assembly including a hub reduction (94, 122, 106), wherein the axle shaft (48) interacts with the sun gear (106) of the hub reduction.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a hub reduction in the driving wheel of APA in view of Chamberlain since having a hub reduction in a driving wheel is old and well known in the art. Further the wheel hub of Chamberlain permits stowage of, or removal of the drive shaft axle, whereby the vehicle can be more easily moved or towed without the overall drive mechanism rotating (col. 1, lines 15-18). Note that the modified vehicle would have all the features recited in claims 11 and 13.

Regarding claim 12, the combination would have the features recited in claim 12 because Schreiner shows the connection (82, 83) between the internal gear (81) and the drive shaft (6L) extending coaxially through the sun gear (80), and the control motor (9L) interacts with the sun gear (80) by way of a gear (the gear on the motor shaft).

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10. Claims 1, 2, 4, 5, 8-10 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Hamada et al. (US 6,325,736).

APA shows a vehicle as set forth in the paragraph 7 above.

APA does not show at least one of the first and second transmission branches comprising at least two control units.

Hamada et al show a vehicle (see Fig. 10) having a pair of driving wheels (5R, 5L), a transmission branch (7) including two control units (9R, 9L), one for each driving wheel thereof, each control unit comprising control means (15R, 15L, 9R, 9L) for varying the transmission ratio of a respective driving wheel.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace one of the transmission branches of APA by the transmission branch of Hamada et al so that the value of the difference rotation between the left and right wheels is controlled to become a value which fits to the target cornering radius at the time of cornering control (col. 14, lines 4-10).

The modified vehicle would have all the features recited 2, 4, 5, 8-10, 16 and 17 because Hamada et al show the control unit utilizing a steering lock angle of the vehicle as a control parameter, the control unit comprising a control motor (9R) configured to influence the transmission ratio of a planetary gear (26R), the planetary gear set comprising a sun gear (80), a planet carrier (83) with planet wheels (82) and internal gear (81), the control motor (9R) connected to the sun gear (80), wherein the connection (82, 83) between the internal gear (81) and an axle differential (6L) extends coaxially through the sun gear (80) and the control motor (9R) is configured to interacting with the sun gear by way of a gear (the gear on the motor shaft),

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the control unit (9L) is disposed between a drive shaft (6L) and a driving wheel (5R) so that the drive shaft (6L) interacts with an internal gear (81) and the driving wheel interacts with the planet wheels (82), wherein during cornering of the vehicle, a speed of one of the driving wheels is varied relative to the other driving wheel (col. 13 and 14).

Regarding claim 15, APA shows the vehicle being articulated.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Hamada et al. (US 6,325,736) as applied to claims 1, 4 and 5 above, and further in view of Mukai et al. (US 5,844,387).

The combination of APA and Hamada et al shows the planetary gear-set and the control motor being connected by a gear (the gear on the motor output shaft) (see Hamada et al).

Hamada et al do not specify that the motor output shaft gear is a hypoid gear. Hypoid gear used in the vehicle transmission is old and well known. For example, Mukai et al show a motor (8) including a hypoid gear 4.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of APA and Hamada et al such that the control motor includes a hypoid gear in view of Mukai et al since using a hypoid gear in the transmission is old and well known in the art.

12. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Hamada et al. (US 6,325,736) as applied to claims 1, 8 and 10 above, and further in view of Chamberlain (US 4,186,626).



APA does not show the driving wheels having a hub reduction. A hub reduction arranged in a wheel hub is old and well known in the art. For example, Chamberlain shows a wheel hub assembly including a hub reduction (94, 122, 106), wherein the axle shaft (48) interacts with the sun gear (106) of the hub reduction.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a hub reduction in the driving wheel of APA in view of Chamberlain since having a hub reduction in a driving wheel is old and well known in the art. Further the wheel hub of Chamberlain permits stowage of, or removal of the drive shaft axle, whereby the vehicle can be more easily moved or towed without the overall drive mechanism rotating (col. 1, lines 15-18). Note that the modified vehicle would have all the features recited in claims 11 and 13.

Regarding claim 12, the combination would have the features recited in claim 12 because Hamada et al show the connection (82, 83) between the internal gear (81) and the drive shaft (6L) extending coaxially through the sun gear (80), and the control motor (9L) interacts with the sun gear (80) by way of a gear (the gear on the motor shaft).

#### ***Allowable Subject Matter***

13. Claim 18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

#### ***Response to Arguments***

14. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Communication***

16. Submission of your response by facsimile transmission is encouraged. The fax phone numbers for the organization where this application or proceeding is assigned are **(571) 273-8300**. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence not permitted by facsimile transmission, see M.P.E.P. 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check should not be submitting by facsimile transmission separately from the check. Responses submitted by facsimile transmission should include a Certificate of Transmission (M.P.E.P. 512). The following is an example of the format the certification might take:

I hereby certify that this correspondence is being facsimile transmitted to

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the Patent and Trademark Office on \_\_\_\_\_  
(Date)

Typed or printed name of person signing this certificate:

\_\_\_\_\_  
\_\_\_\_\_  
(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and M.P.E.P. 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha D. Ho whose telephone number is **571-272-7091**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on **571-272-7095**.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HDH  
(571) 272-7091  
March 29, 2006

  
**HA HO**  
**PRIMARY EXAMINER**

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3/29/06